

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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WRITTEN OPINION
(PCT Rule 66)

Date of mailing
(day/month/year)

18.08.2004

Applicant's or agent's file reference
AMS.P52461WO

REPLY DUE

within 3 month(s)
from the above date of mailing

International application No.
PCT/EP 03/50927

International filing date (day/month/year)
02.12.2003

Priority date (day/month/year)
06.12.2002

International Patent Classification (IPC) or both national classification and IPC
G01V1/38

Applicant
WESTERNGECO SEISMIC HOLDINGS LIMITED et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited** to reply to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 06.04.2005

Name and mailing address of the international preliminary examining authority:



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WRITTEN OPINION

International application No. PCT/EP 03/50927

I. Basis of the opinion

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-20 as originally filed

Claims, Numbers

1-42 as originally filed

Drawings, Sheets

1/9-9/9 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
 - ☐ the language of publication of the international application (under Rule 48.3(b)).
 - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority in written form.
 - ☐ furnished subsequently to this Authority in computer readable form.
 - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4. The amendments have resulted in the cancellation of:
- ☐ the description, pages:
 - ☐ the claims, Nos.:
 - ☐ the drawings, sheets:
5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
6. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1(no),14(no), 24(no), 39(no)
Inventive step (IS)	Claims	
Industrial applicability (IA)	Claims	all yes

2. Citations and explanations**see separate sheet**

The examination is being carried out on the **following application documents:**

Text for the Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL PL PT RO SE SI
SK TR

Description, pages:

1-20 as originally filed

Claims, No.:

1-42 as originally filed

Drawings, sheets:

1/9-9/9 as originally filed

Reference is made to the following document:

D1: US-A-5428581 (Doisy)

27-06-1995

1.) Problems concerning clarity (Art.6 PCT):

1.1) The application does not comply with Art.6 PCT because the claims are not concise; they claim various subject-matters in the same category: claims 14 and 24 (methods) and claims 1 and 39 (apparatus, computer program). To overcome this objection the applicant is requested to draft one independent claim in each category and make the other claims dependent claims of these independent claims.

1.2) The subject-matters of claims 1 (apparatus) and claim 14 (method) are too broadly defined and therefore not covered by the description (s. also PCT Guidelines Section IV / III-6.1): it is clear from the description (p.9, li.20 and p.12, li.5-7) that the invention relates to (method and apparatus):

- the determination of the position of sensors on a seismic cable based on a determined propagation time delay between source and sensors.

Also the processing unit (claim 1) is adapted to determine from a propagation time delay between source and sensors the position of the sensors on a seismic cable (p.12,

li.5-7).

The wording of claims 1 and 14 in their present form embraces also the possibility of determining the position of a third object (different from the sensors on the cable) based on the calculated propagation time delay between source and receivers (s. also point 2, "novelty" of this communication). This is not covered by the description.

It is therefore not clear in claims 1 and 14: a) to which purpose the determination of the propagation time delay serves and b) assuming that the purpose is the determination of a position, the position of which object is determined.

2.) The present application does not meet the requirements of **Article 33(1),(2) PCT**, because the subject-matters of claim 1 (apparatus) and the corresponding method claim 14 in their present form are not new. D1 describes a known method of determining the position of a moving target by (col.1, li.9-20):

- generating a positioning signal from a source
- receiving the positioning signal with a receiver positioned along a seismic cable
- providing a (computed) Doppler shifted positioning signal corresponding to the positioning signal (col.1, li.14-16)
- determining a propagation time delay from source to receiver using the generated positioning signal, the received positioning signal and the computed Doppler shifted positioning signal (col.1, li.13-20; the correlation step between received signals and several copies of Doppler shifted signals).

3.) A method (apparatus) for determining the position of sensors on a seismic cable claimed as independent claims 1 and 14 without the deficiencies as mentioned in point 1 of this communication does not appear to be inventive over D1 (**Art. 33(1),(3) PCT**). It merely employs the same principle (using computed Doppler shifted positioning signals) for the localization of the sensors and not of a third object.

4.) Independent claims 24 and 39:

The subject matters of these claims are not new (**Art.33 (1),(2), PCT**): they constitute the set-up of look-up tables which are used by the signal processing unit and which implicitly must exist in the known method as described in D1 (col.1, li.14-16: "... copies of the signals sent out, each copy corresponding to a different Doppler shift.").

5.) The dependent claims:

5.1) The subject-matters of dependent claims 2,3,4,15-18,23 and 38 are comprised in D1 (col.1, li.9-20 or implicitly comprised like the library and the Doppler shifted signals stored in the library) and therefore not new (**Art. 33(1),(2) PCT**).

5.2) The subject-matters of claims 5-13, 19-22, 25-37 and 40-42 appear to be a matter of normal design procedure which easily would be included in D1 and which therefore do not involve an inventive step (**Art.33(1),(3) PCT**).

6.) Should the applicant nevertheless regard some particular matter as new and inventive, the following points should be taken into consideration:

6.1) **The claims should be concise (Art.6 PCT)**: the applicant is requested to draft one independent claim per category (one independent method claim and one independent apparatus claim) and make the other claims dependent claims on these independent claims.

6.2) **The independent claims should be clear (Art. 6 PCT)**: all features necessary to carry out a method as claimed and to define the structural features of an apparatus as claimed should be included in the independent claims.

6.3) The applicant should also **indicate in the letter of reply the difference** of the subject-matter of the new claims vis-à-vis the state of the art and the significance thereof.

6.4) In order to expedite the procedure, the applicant is requested to **indicate in his reply the passages** in the application as originally filed which form the basis of the amendments. The applicant respectfully is reminded of **Art.19(2) PCT** which says that the amendments shall not go beyond the disclosure in the international application as originally filed.